

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
1 September 2005 (01.09.2005)

PCT

(10) International Publication Number  
**WO 2005/080796 A1**

(51) International Patent Classification<sup>7</sup>: **F04C 18/356**, 29/08, 23/00

(21) International Application Number: PCT/JP2005/002955

(22) International Filing Date: 17 February 2005 (17.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 2004-047372 24 February 2004 (24.02.2004) JP

(71) Applicant (for all designated States except US): MAT-SUSHITA ELECTRIC INDUSTRIAL CO., LTD. [JP/JP]; 1006, Ohaza Kadoma, Kadoma-shi, Osaka 571-8501 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): HASEGAWA, Hiroshi. OKAICHI, Atsuo. NISHIWAKI, Fumitoshi.

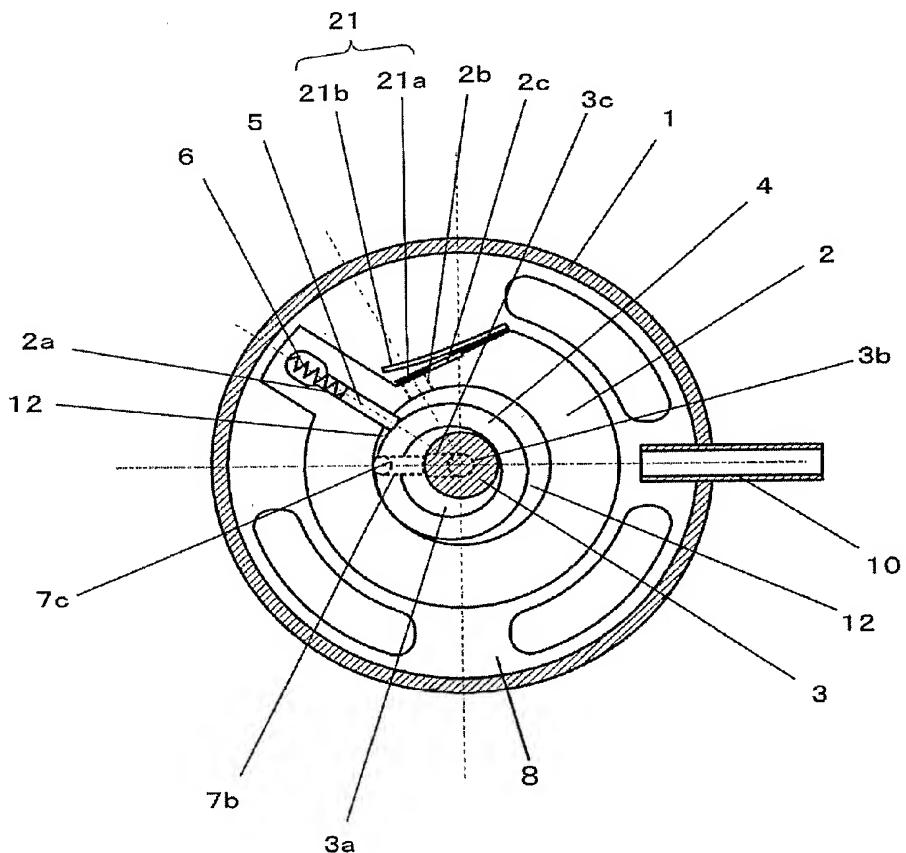
(74) Agents: SHIMIZU, Yoshihiro et al.; 3rd Floor, Yashiro Building, 14-4, Takadanobaba 2-chome, Shinjuku-ku, Tokyo 169-0075 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,

[Continued on next page]

(54) Title: EXPANDER



(57) Abstract: A cylinder (2), a roller (4), an upper bearing member (7) and a lower bearing member (8) form a space, the space is partitioned by a vane (5) into working chambers (12). Working fluid is sucked into the working chamber (12) through a suction hole (7c), the working fluid is expanded in the working chamber (12) whose volume is varied by rotation, and the working fluid is discharged from a discharge hole (2b) into a discharge space (20). A differential pressure regulating valve (21) which is opened when pressure in the working chamber (12) is higher than pressure in the discharge space 20 is provided in the discharge hole (2b). With this, repressing can be carried out even if excessive expansion of working fluid is generated. Therefore, excessive expansion loss can be prevented.

WO 2005/080796 A1



ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— *with international search report*